3.16 Trig. Equations of Quadratic Type

Name _____ Date _____ Period _____

Find all real numbers on the interval [0, 2π) that satisfy each equation. Round approximate answers to the nearest tenth.

1. $3\sin^2 x = \sin x$

2. $2\cos^2 x + 3\cos x = -1$

3. $5\sin^2 x - 2\sin x = \cos^2 x$

4. $\sin x \cos\left(\frac{\pi}{4}\right) + \cos x \sin\left(\frac{\pi}{4}\right) = \frac{1}{2}$

5. $\sin 2x \cos x - \cos 2x \sin x = -\frac{1}{2}$

6. $\sin\left(\frac{\pi}{6}\right)\cos x + \cos\left(\frac{\pi}{6}\right)\sin x = -\frac{1}{2}$

Find all values of Θ in the interval of [0°, 360°) that satisfy each equation. Round approximate answers to the nearest tenth of a degree.

7. $2\sin\theta = \cos\theta$

8. $3\sin 2\theta = \cos 2\theta$

9. $9\sin^2\theta + 12\sin\theta + 4 = 0$

10. $12\cos^2\theta + \cos\theta - 6 = 0$

11. A block is attached to a spring and set in motion on a frictionless plane. Its location on the surface at any time *t* in seconds is given in meters by $x = \sqrt{3}\sin 2t + \cos 2t$. For what values of *t* is the block at its resting position x = 0?

12. Find all solutions to $(\sin x - 1)(\sin x + 1) = 0$ in the interval (0, 2π).

13. Complete the sum and difference indetities.

a) sin(x + y) = _____

b) sin(x – y) = _____